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09/913,434	08/14/2001	Toshihide Sekido	1275-01	9784

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EXAMINER

STAICOVICI, STEFAN

ART UNIT	PAPER NUMBER
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1732

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/913,434

Applicant(s) 

SEKIDO ET AL.

Examiner

Stefan Staicovici

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 March 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-67 is/are pending in the application.
- 4a) Of the above claim(s) 1-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 47-67 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Group II in Paper No. 4 is acknowledged.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 47-48 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Day (US Patent No. 5,589,243).

Day ('243) teaches the claimed process for manufacturing a FRP article including, stacking a plurality of cores (40) and fiber reinforced sheets (42) and impregnating said sheets with a resin to form said FRP article (see col. 7, lines 19-37). Further, Day ('243) teaches a core panel (385) sandwiched between fiberglass skins (394) that is impregnated with resin by vacuum (see col. 16, lines 34-55).

Regarding claims 48 and 52, Day ('243) teaches fiber reinforced sheets (42) and (399) (see Figure 35). Further, Day ('243) teaches that reinforcing webs (390) are impregnated with resin (see col. 16, lines 34-55 and Figure 35).

4. Claims 47-48, 50-53 and 58-61 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 97/03898 (see US Patent No. 5,979,684, the US equivalent, for specific column and line citations).

WO 97/03898 teaches the claimed process for manufacturing a FRP article including, stacking a plurality of cores (32), wrapping said cores with fiber reinforced material (31), wrapping said wrapped cores with fiber reinforced sheets (30a, 30b) to form a wrapped reinforcement (5) (see col. 9, lines 24-34 and, Figures 1 and 4), positioning said wrapped reinforcement (5) in a mold (6), placing a mesh sheet (4) over said wrapped reinforcement (5) and placing a vacuum bag (2) over said mesh sheet (4) and wrapped reinforcement (5), drawing a vacuum onto said vacuum bag (2) and injecting a resin (1) to impregnate said wrapped reinforcement (5) (see column 5, lines 22-45 and Figure 1).

Regarding claims 48 and 52, WO 97/03898 teaches wrapping said cores with fiber reinforced material (31) that forms intermediate reinforcing sheets and the use of reinforcing webs (102) in the thickness direction (see column 11, lines 35-42 and, Figures 4 and 12).

In regard to claim 50, WO 97/03898 teaches mesh sheet (4). It is submitted that a mesh is a net-like structure.

Specifically regarding claim 51, WO 97/03898 teaches positioning said wrapped reinforcement (5) in a mold (6), placing a mesh sheet (4) over said wrapped reinforcement (5) and placing a vacuum bag (2) over said mesh sheet (4) and wrapped reinforcement (5), drawing a vacuum onto said vacuum bag (2) and injecting a resin (1) to impregnate said wrapped reinforcement (5) (see column 5, lines 22-45 and Figure 1).

Regarding claims 52 and 53, WO 97/03898 teaches the use of webs (27) (see Figure 3) and hollow cores (26) (see column 9, lines 10-15).

In regard to claims 58-61, WO 97/03898 teaches the use of preformed reinforcing webs (102) in the thickness direction (see column 11, lines 35-42 and, Figures 4 and 12). As seen from Figure 12, it is submitted that said core (101) includes a recessed portion in order for the web (102) to be inserted. Further, Figure 12 teaches upper and lower fiber skins (100a, 100b) that extend in the same direction as web (102) and a flange portion perpendicular to a thickness direction to form the I-shaped reinforcing web.

5. Claims 53-54 and 64-67 are rejected under 35 U.S.C. 102(b) as being anticipated by Seemann, III *et al.* (US Patent No. 5,721,034).

Seemann, III *et al.* ('034) teach the claimed process of manufacturing a FRP article including, providing a core (60), placing a distribution medium (64) having a net-like structure (see column 5, lines 17-20) onto said core (60), wrapping said core (60) and distribution medium (64) with fiber material (66) to form a wrapped core, placing a vacuum bag (68) over said wrapped core and inserting resin while drawing a vacuum onto said vacuum bag (68) to impregnate said fiber material (66) and form said FRP article (see column 5, lines 11-35).

Regarding claims 53-54, Seemann, III *et al.* ('034) teach a hollow core (see column 2, line 49), such as blown polyethylene. It is submitted that a hollow blown polyethylene core is obtained by blow molding.

In regard to claim 65, Seemann, III *et al.* ('034) teach a resin distribution channel (62) in said core (60) (see column 5, lines 10-15).

Specifically regarding claim 66, Seemann, III *et al.* ('034) teach a hollow core (see column 2, line 49).

Regarding claim 67, Seemann, III *et al.* ('034) teach wrapping said core (60) and distribution medium (64) with fiber material (66) to form a wrapped core (see column 5, lines 11-35).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 47-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Seemann, III *et al.* (US Patent No. 5,721,034) in view of Day (US Patent No. 5,589,243) or WO 97/03898.

Seemann, III *et al.* ('034) teach the basic claimed process of manufacturing a FRP article including, providing a core (60), placing a distribution medium (64) having a net-like structure (see column 5, lines 17-20) onto said core (60), wrapping said core (60) and distribution medium (64) with fiber material (66) to form a wrapped core, placing a vacuum bag (68) over said wrapped core and inserting resin while drawing a vacuum onto said vacuum bag (68) to impregnate said fiber material (66) and form said FRP article (see column 5, lines 11-35).

Regarding claim 47, although Seemann, III *et al.* ('034) teach a processing for making large composite structures, Seemann, III *et al.* ('034) do not specifically teach stacking said cores. Day ('243) teaches a process for manufacturing a FRP article including, stacking a plurality of cores (40) and fiber reinforced sheets (42) and impregnating said sheets with a resin to form said FRP article (see col. 7, lines 19-37). Further, Day ('243) teaches a core panel (385) sandwiched between fiberglass skins (394) that is impregnated with resin by vacuum (see col. 16, lines 34-55). WO 97/03898 teaches a process for manufacturing a FRP article including, stacking a plurality of cores (32), wrapping said cores with fiber reinforced material (31), wrapping said wrapped cores with fiber reinforced sheets (30a, 30b) to form a wrapped reinforcement (5) (see col. 9, lines 24-34 and, Figures 1 and 4), positioning said wrapped reinforcement (5) in a mold (6), placing a mesh sheet (4) over said wrapped reinforcement (5) and placing a vacuum bag (2) over said mesh sheet (4) and wrapped reinforcement (5), drawing a vacuum onto said vacuum bag (2) and injecting a resin (1) to impregnate said wrapped reinforcement (5) (see column 5, lines 22-45 and Figure 1). Therefore, it would have been obvious for one of ordinary skill in the art to have stacked cores as taught by Day ('243) or WO 97/03898 because, Day ('243) or WO 97/03898 teach that stacking of cores forms large composite structures and Seemann, III *et al.* ('034) requires forming large composite structures.

Regarding claims 48 and 52, WO 97/03898 teaches wrapping said cores with fiber reinforced material (31) that forms intermediate reinforcing sheets and the use of reinforcing webs (102) in the thickness direction (see column 11, lines 35-42 and, Figures 4 and 12). Further regarding claims 48 and 52, Day ('243) teaches fiber reinforced sheets (42) and (399) (see Figure

35). Further, Day ('243) teaches that reinforcing webs (390) are impregnated with resin (see col. 16, lines 34-55 and Figure 35). Therefore, it would have been obvious for one of ordinary skill in the art to have intermediate reinforcing sheets and webs between stacked cores as taught by Day ('243) or WO 97/03898 because, both Day ('243) and WO 97/03898 teach that stacking of cores forms large composite structures and Seemann, III *et al.* ('034) requires forming large composite structures and also because both Day ('243) and WO 97/03898 teach that intermediate reinforcing sheets and webs increase the strength of said large FRP article.

In regard to claim 49, Seemann, III *et al.* ('034) a resin distribution medium having a plurality of channels (14, 18) (see column 2, lines 53-65 and Figure 1).

Specifically regarding claims 50-51, Seemann, III *et al.* ('034) placing a distribution medium (64) having a net-like structure (see column 5, lines 17-20) onto said core (60), wrapping said core (60) and distribution medium (64) with fiber material (66) to form a wrapped core, placing a vacuum bag (68) over said wrapped core and inserting resin while drawing a vacuum onto said vacuum bag (68) to impregnate said fiber material (66) and form said FRP article (see column 5, lines 11-35).

8. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seemann, III *et al.* (US Patent No. 5,721,034) or WO 97/03898 in view of Johnson *et al.* (US Patent No. 5,169,590).

Seemann, III *et al.* ('034) or WO 97/03898 teaches the basic claimed process as described above.



Regarding claim 54, although both Seemann, III *et al.* ('034) and WO 97/03898 teach a hollow core, Seemann, III *et al.* ('034) or WO 97/03898 do not teach blow molding a hollow core. Johnson *et al.* ('590) teach a process for blow-molding a hollow core that is then wrapped with fiber material and impregnated with resin (see Abstract). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a blow molded hollow core as taught by Johnson *et al.* ('590) in the process of Seemann, III *et al.* ('034) or WO 97/03898 because, Johnson *et al.* ('590) teach a process for blow-molding a hollow core, whereas both Seemann, III *et al.* ('034) and WO 97/03898 require hollow cores and also because, a hollow core provides for reduced weight, hence improving product quality.

9. Claims 49 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 97/03898 (see US Patent No. 5,979,684, the US equivalent, for specific column and line citations) in view of Seemann, III *et al.* (US Patent No. 5,721,034).

WO 97/03898 teaches the basic claimed process as described above.

Regarding claims 49 and 62, WO 97/03898 does not teach a resin distribution medium having a plurality of channels. Seemann, III *et al.* ('034) a resin distribution medium having a plurality of channels (14, 18) (see column 2, lines 53-65 and Figure 1). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a resin distribution medium having a plurality of channels as taught by Seemann, III *et al.* ('034) in the process of WO 97/03898 because, Seemann, III *et al.* ('034) specifically teaches that such a resin distribution system provides uniform resin distribution specifically for large composite structures having

multiple cores as the FRP article of WO 97/03898 (see column 1, lines 60-64) and also because both references teach similar materials, processes and end-products.

Further regarding claim 62, Seemann, III *et al.* ('034) teach placing resin distribution channels over the entire surface of the core in order to optimize resin flow (see column 4, lines 17-34). Furthermore, Seemann, III *et al.* ('034) teach drilling holes between cores to connect feeder channels forming parallel and series resin flow circuits (see column 4, lines 44-53). It is submitted that the position and geometry of the resin distribution channels are result-effective variables. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Therefore, it would have been obvious for one of ordinary skill in the art to have used routine optimization to determine optimum resin flow paths throughout the entire surface of the core in the process of WO 97/03898 in view of Seemann, III *et al.* ('034) because, Seemann, III *et al.* ('034) specifically teach the position and geometry of the resin distribution channels are result-effective variables.

10. Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seemann, III *et al.* (US Patent No. 5,721,034) in view of Johnson *et al.* (US Patent No. 5,169,590) and in further view of Louderback *et al.* (US Patent No. 5,885,513).

Seemann, III *et al.* ('034) teach the basic claimed process of manufacturing a FRP article including, providing a core having a distribution medium having a plurality of channels (14, 18) (see column 2, lines 53-65 and Figure 1) onto said core, wrapping said core and distribution medium with fiber material to form a wrapped core, placing a vacuum bag over said wrapped core and inserting resin while drawing a vacuum onto said vacuum bag to impregnate said fiber material and form said FRP article (see column 2, line 60 through column 3, line 51).

Regarding claim 63, although Seemann, III *et al.* ('034) teach a blown polyethylene core, Seemann, III *et al.* ('034) do not teach a molded groove in said core. Johnson *et al.* ('590) teach a process for blow-molding a hollow core and integrally molding resin distribution channels (26) (see column 2, lines 47-53). Further, Johnson *et al.* ('590) teach wrapping said fiber material and impregnating with resin (see Abstract). Louderback *et al.* ('513) teach a core having a plurality of grooves (60a) that are either machined or molded (see column 5, lines 26-28). Therefore, it would have been obvious for one of ordinary skill in the art to have molded resin distribution grooves in a core as taught by Johnson *et al.* ('590) in the molding process of Seemann, III *et al.* ('034) because, Louderback *et al.* ('513) specifically teach that machining and molding are equivalent means for forming resin distribution grooves in a core of a FRP article, whereas Johnson *et al.* ('590) teach molding and Seemann, III *et al.* ('034) teach machining resin distribution grooves.

11. Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seemann, III *et al.* (US Patent No. 5,721,034) in view of Louderback *et al.* (US Patent No. 5,885,513).

Seemann, III *et al.* ('034) teach the basic claimed process of manufacturing a FRP article including, providing a core having a distribution medium having a plurality of channels (14, 18) (see column 2, lines 53-65 and Figure 1) onto said core, wrapping said core and distribution medium with fiber material to form a wrapped core, placing a vacuum bag over said wrapped core and inserting resin while drawing a vacuum onto said vacuum bag to impregnate said fiber material and form said FRP article (see column 2, line 60 through column 3, line 51).

Regarding claim 63, although Seemann, III *et al.* ('034) teach a blown polyethylene core, Seemann, III *et al.* ('034) do not teach a molded groove in said core. Louderback *et al.* ('513) teach a core having a plurality of grooves (60a) that are either machined or molded (see column 5, lines 26-28). Therefore, it would have been obvious for one of ordinary skill in the art to have molded said grooves as taught by Louderback *et al.* ('513) in molding process of Seemann, III *et al.* ('034) because, Louderback *et al.* ('513) specifically teaches that machining and molding are equivalent means for forming resin distribution grooves in a core of a FRP article.

12. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Newsom (US Patent No. 4,554,036) in view of Folsom *et al.* (US Patent No. 5,676,979).

Newsom ('036) teaches the basic claimed process of repairing a fiber reinforced composite article including, providing a resin pre-impregnated fibrous repair material at the repair site, placing a vacuum bag over said repair site and drawing a vacuum while curing said resin pre-impregnated fibrous repair material (see Abstract and Figure 2).

Regarding claim 55, Newsom ('036) does not teach injecting a resin material. Folsom *et al.* ('979) teach a process for repairing resin-dry areas including injecting resin into said resin-dry area (see column 2, lines 5-25 and Figure 2). Therefore, it would have been obvious for one of ordinary skill in the art to have injected resin rather than using a resin pre-impregnated fibrous repair material as taught by Folsom *et al.* ('979) in the process of Newsom ('036) because, Folsom *et al.* ('979) specifically teach that such a process allows for reduced costs and improved structural integrity of composite materials (see column 2, lines 51-59).

13. Claims 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newsom (US Patent No. 4,554,036) in view of Folsom *et al.* (US Patent No. 5,676,979) and in further view of Seemann (US Patent No. 5,052,906).

Newsom ('036) in view of Folsom *et al.* ('979) teach the basic claimed process as described above.

Regarding claims 56-57, Newsom ('036) in view of Folsom *et al.* ('979) do not teach using a resin distribution medium and a resin permeable peel-ply. Seemann ('906) teach a process of manufacturing a FRP article including, placing a resin permeable peel-ply (7) between a distribution medium (5) and fiber reinforced material (9) to permit uniform distribution of resin upon inserting resin while drawing a vacuum to impregnate said fiber reinforced material (9) and to allow said resin distribution medium (5) be easily removed (see column 4, line 68 through column 5, line 3 and column 5, lines 10-25 and, Figure 1). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a resin distribution medium having a net-like structure and a resin permeable peel-ply as taught by Seemann ('906) in the process of Newsom ('036) in view of Folsom *et al.* ('979) because, Seemann ('906) specifically teach that a resin distribution allows for uniform resin distribution during a vacuum assisted molding process hence, improving product quality.

#### ***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

